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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/592,349	06/12/2000	William C. Peatman	SC11100ZP	5118

23330 7590 04/02/2002

MOTOROLA, INC.
CORPORATE LAW DEPARTMENT - #56-238
3102 NORTH 56TH STREET
PHOENIX, AZ 85018

EXAMINER

WILLE, DOUGLAS A

ART UNIT PAPER NUMBER

2814

DATE MAILED: 04/02/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/592,349

Applicant(s)

PEATMAN ET AL.

Examiner

Douglas A Wille

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 27 February 2002.
- 2a) ☒ This action is FINAL. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-21 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-21 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s) _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1, 4 - 16, 20 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Abrokwhah et al. ('929) in view of Kimura.
3. With respect to claims 1, 4 - 13, 15, 16 and 20, Abrokwhah et al. ('929) show a HFET (see cover Figure and column 2, line 41 et seq.) with a substrate 10 of GaAs with AlGaAs intermediate layers, with layer 16 of GaAs, delta doped layer 22, InGaAs channel layer 23, AlGaAs layer 24 and cap layer 25 of GaAs. There is a gate contact 30 with sidewalls 35 and the layer 25 is partly removed. Abrokwhah et al. ('929) do not show the layer 22 is GaAs but it would have been obvious to form it with GaAs to show the required bandgap discontinuity with the channel layer and since it would be compatible with the GaAs layer beneath it. Note that since layer 22 is delta doped it will have some undoped material on either face. Note also that implantation is performed before the layer 25 is removed. Kimura shows a FET where the gate has a layer of i-GaAs which is the same width as the gate and provides high speed operation. It would have been obvious to apply the Kimura technique to the Abrokwhah et al. ('929) device for the advantage shown.
4. With respect to claims 14 and 21, it would have been obvious to anneal the structure to remove any damage due to the etching process.

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5. Claims 2, 3 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Abrokwah et al. ('929) in view of Kimura and further in view of Abrokwah et al. ('739).

6. With respect to claim 2, Abrokwah et al. ('929) do not show the thickness of layer 25 but Abrokwah et al. ('739) show a similar device in which the layer is < approximately 5 nm (column 2, line 21). With respect to claims 3 and 19, since criticality has not been established and since Abrokwah et al. ('739) use the modifier "approximately", it is regarded as equivalent.

7. Claims 17 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Abrokwah et al. ('929) in view of Abrokwah et al. ('285).

8. Abrokwah et al. ('285) show a similar device (see cover Figure) with a double layer sidewall. It would have been obvious to use the double layer sidewall shown by Abrokwah et al. ('285) in the Abrokwah et al. ('929) and Kimura device as a design choice. With respect to claim 17, Abrokwah et al. ('285) show implanting after removal and it would have been a design choice to remove the layer either before or after implanting with appropriate adjustment of the implant parameters. Note that if the spacer is not needed as a mask for implantation it could be applied at any time including both before and after implantation.

Response to Arguments

9. Applicant's arguments filed 3/27/02 have been fully considered but they are not persuasive. Applicant argues the amended claims which are addressed above and are not considered further here.

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Conclusion

10. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a).

Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Douglas A Wille whose telephone number is (703) 308-4949. The examiner can normally be reached on M-F (6:15-3:45).

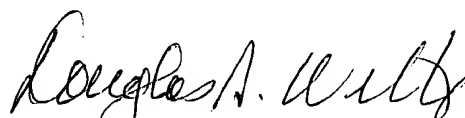
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Olik Chaudhuri can be reached on (703) 306-2794. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-7722 for regular communications and (703) 308-7722 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

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A handwritten signature in cursive script, reading "Douglas A. Wille".

Douglas A. Wille
Patent Examiner

daw

March 27, 2002